Power Market in Utah; Integration of Renewables

Utah Governors Energy Development Summit

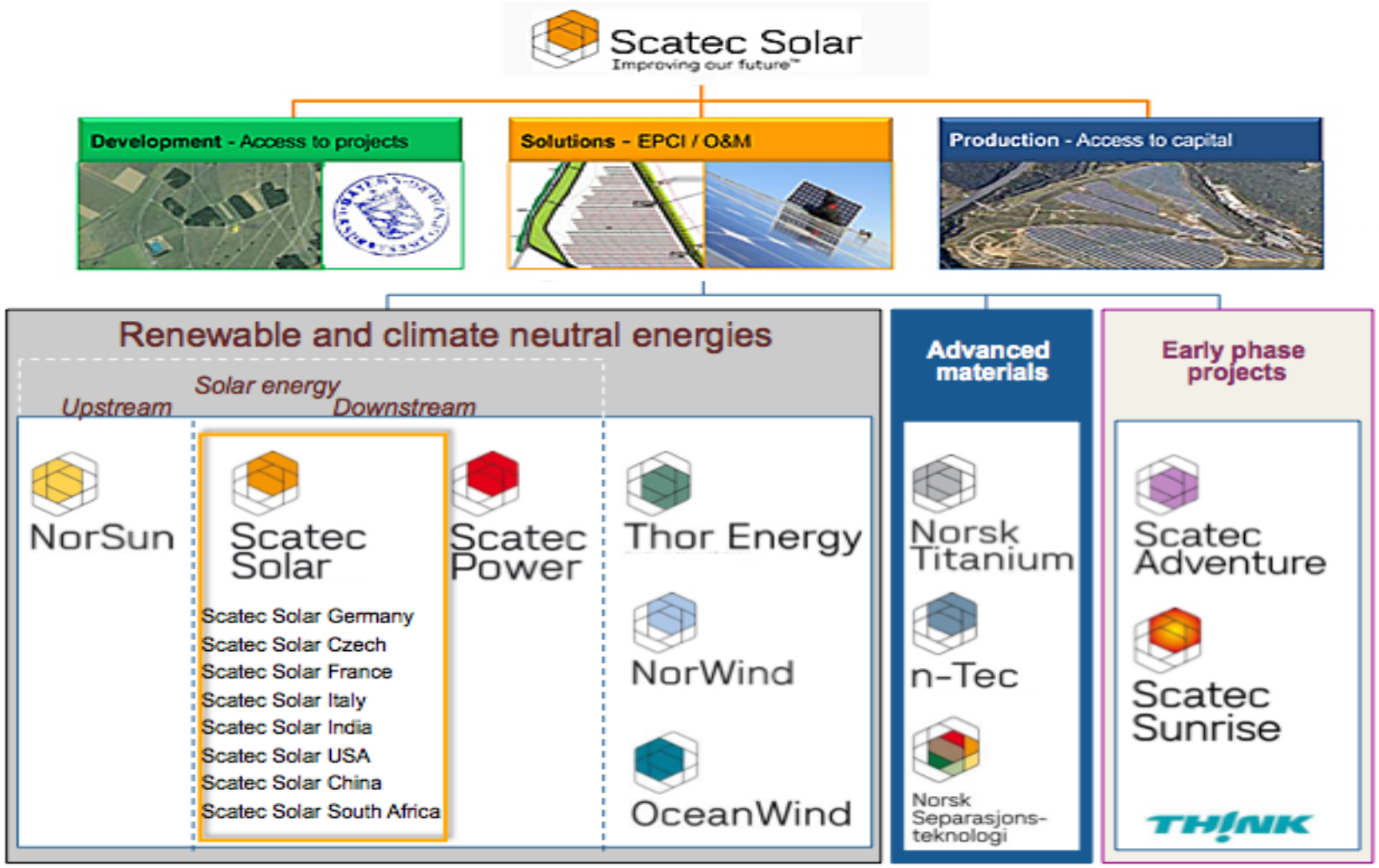
January 10, 2012

LUIGI RESTA
SCATEC SOLAR NORTH AMERICA, LLC
CHIEF EXECUTIVE OFFICER

Luigi.resta@scatecsolar.us
mobile 415.602.2569

BUSINESS SOLUTIONS

Scatec Solar
Improving our future™



GLOBAL PRESENCE

Scatec Solar
Improving our future™

TRACK RECORD: 180 MW installed, 190 MW of firm back-log in South Africa (75MW under construction), 65 MW under O&M, 50 MW sales of project rights

GLOBAL PRESENCE

Scatec Solar
Improving our future™

US:
- 56 MW of project rights in California and Hawaii already sold. 200 MW in Utah in advanced stage development
- Cooperating with wind developer in Texas to offer hybrid solutions

Europe: 1-2 new growth opportunities
- Currently assessing opportunities in Romania, Cyprus and Jordan
- Recently signed a EPC contract and business development cooperation in Romania

Scatec Solar shall focus on 5-6 business development activities at any given time – utilizing the strength of our integrated business model and strong network of local and international partners

South America: Assessing opportunities
- Dedicated team is assessing opportunities

Japan: JV with Itochu in an attractive market
- Japan is introducing an attractive feed-in-tariff regime
- Scatec Solar has a JV with Ecosystem Japan, a subsidiary of Itochu. Installations and revenue expected in 2012

West Africa: huge growth market, cooperation with IFC
- A joint development agreement with IFC (private arm of the World Bank) signed in June 2012
- Plan to build a portfolio of projects in Benin, Burkina Faso, Cameroon, Niger, and Togo

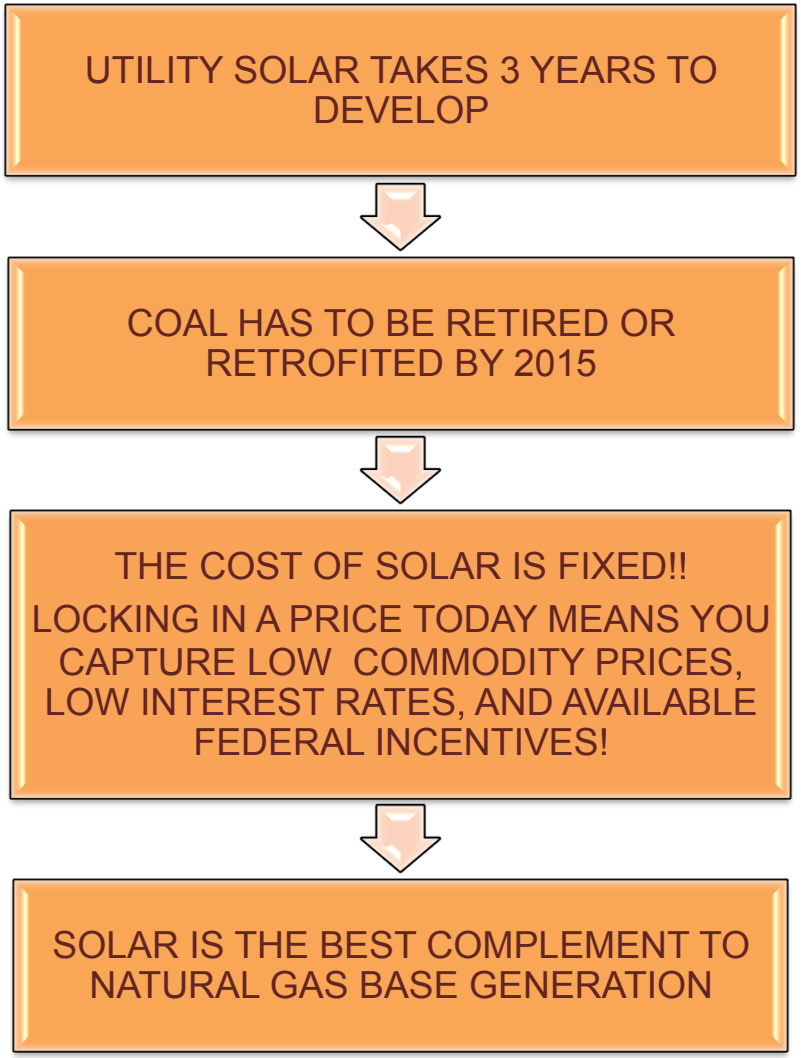
South Africa: key market in 2012 and 2013
- Backlog of 190MW, targeting additional projects for phase 3
- Will be used as starting point for further expansion to nearby countries

WHY SOLAR TODAY?

Scatec Solar
Improving our future™

"In the past, the cost of clean energy was so much higher than fossil alternatives that project developers based investment decisions largely on the generosity of subsidies or support mechanisms available in any location. Now, as a result of dramatic recent reductions in clean energy costs, the industry is shifting towards one where revenue from power sales – and therefore the level of electricity prices and the quality of renewable resources – drive investment."

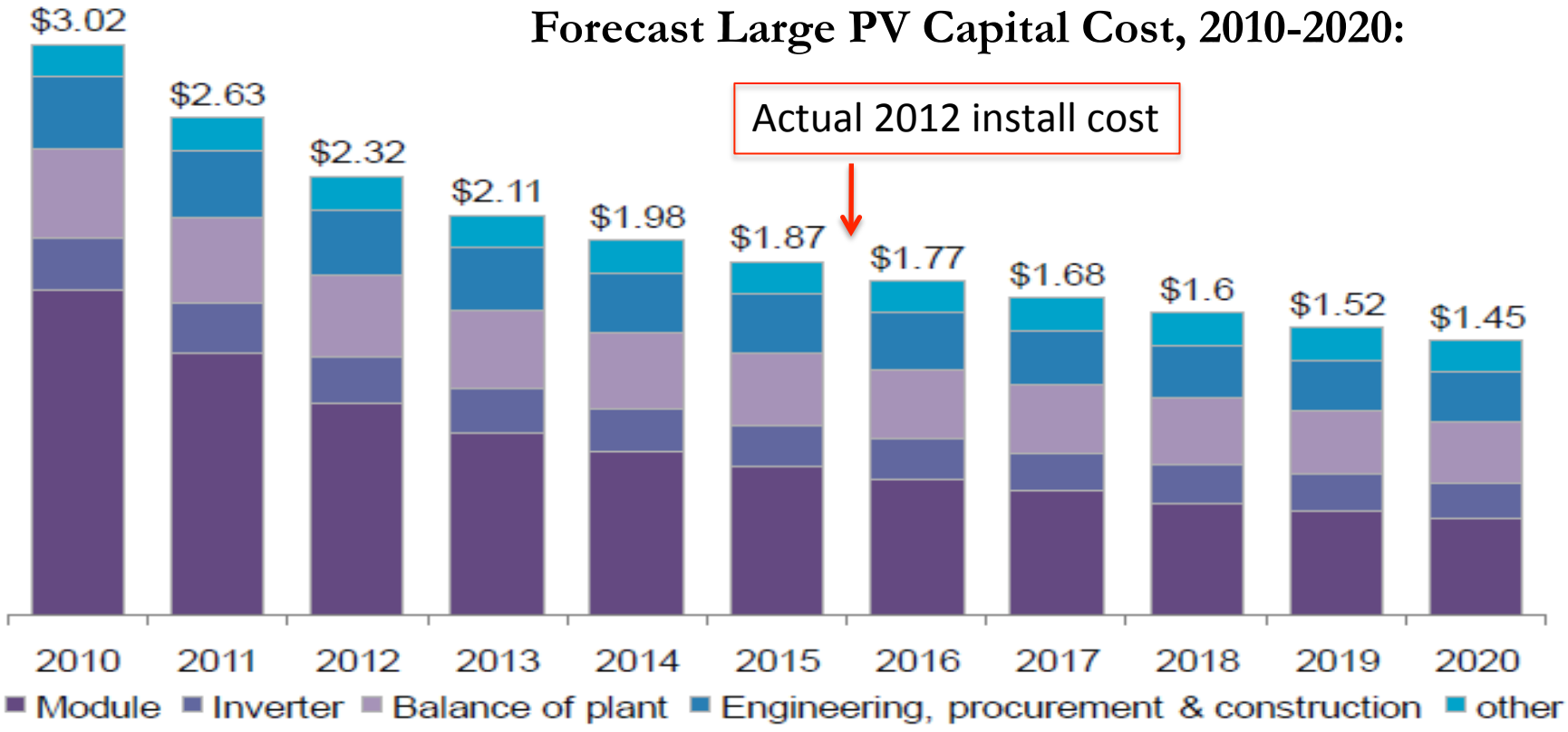
Michael Liebreich, Chief Executive, Bloomberg New Energy Finance



GRID PARITY

Scatec Solar
Improving our future™

Current utility scale installed cost ranges between $1.70 and $1.80 a watt.

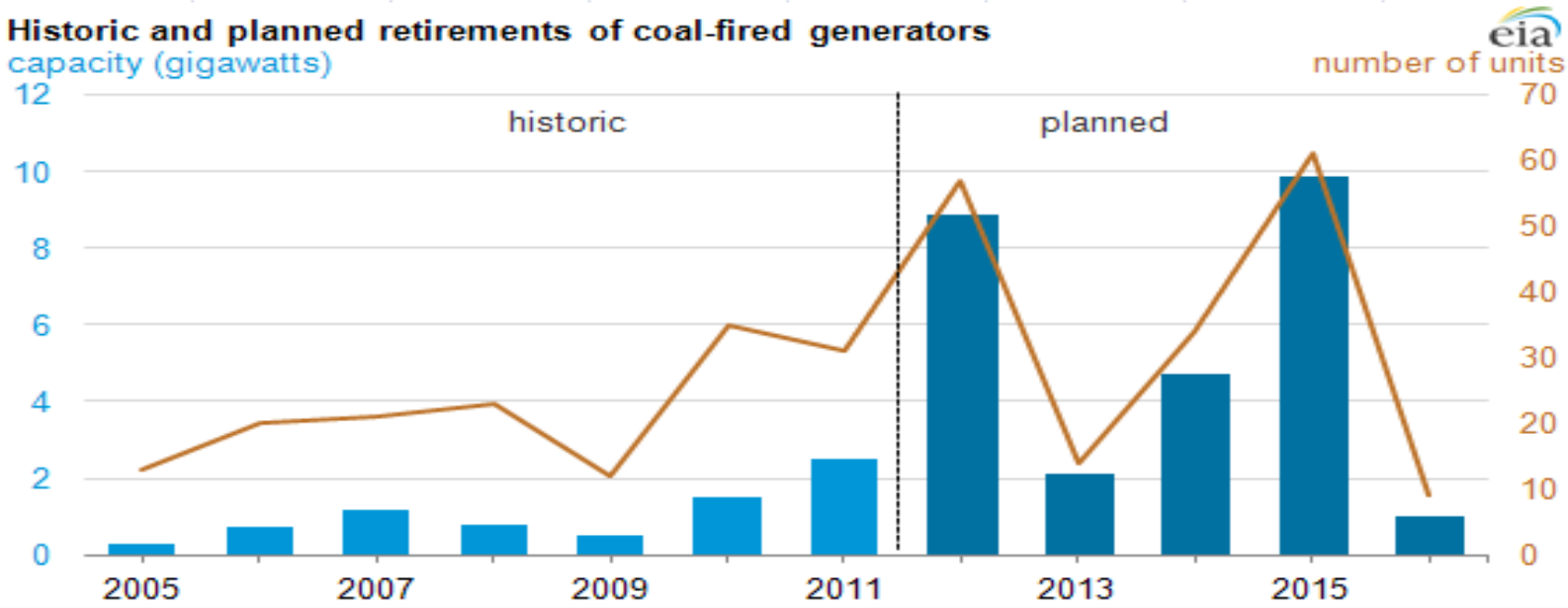


Source: BNEF

COAL FIRED PLANT RETIREMENT

Scatec Solar
Improving our future™

- **Coal-fired thermal units** make up approximately 42% of the US overall market and 80% of Utah's generation base. Coal-fired thermal units were cost-effective. However, the liabilities with cost, retrofitting, and retirement are guaranteed.
- **Hydro-electric facilities** make up approximately 7% of the US overall market and 3% of Utah's generation base. However, water reserve impacts create risks for operations and new development.



- Plant owners and operators report to EIA that they expect to retire almost 27GW of capacity from 175 coal-fired generators between 2012 and 2016.

Source: EIA

EPA ENVIRONMENTAL RETROFITS

Scatec Solar
Improving our future™

Existing and proposed environmental regulations in the U.S. may significantly affect bulk power system reliability depending on the scope and timing of the rule implementation and the mechanisms in place to preserve reliability.

Rule: The acid gas rate limitation

Reason: US coal chlorine content

Retrofit = FGD scrubber

COST: $400-$900/kW

Rule: EPA Utility Air Toxic Rule

Reason: Limit the ash content of coals

Retrofit: Fabric filter controls

COST: $200-$400/kW

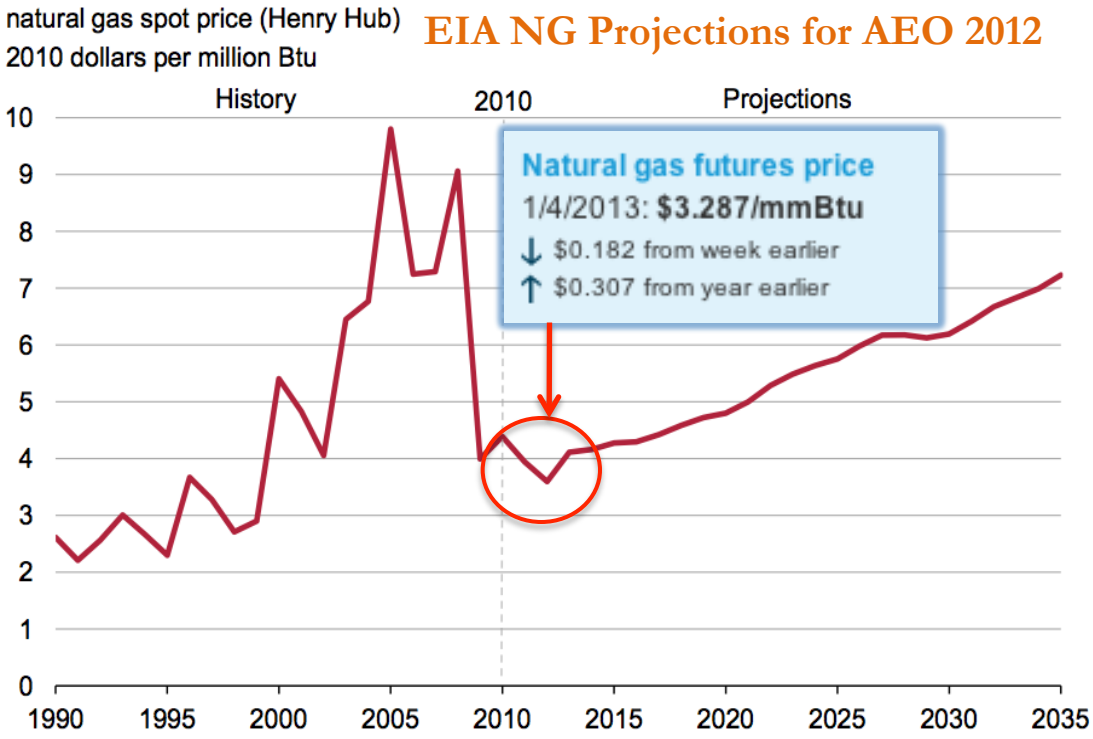
Environmental controls are expected to be put in place to meet air regulations by the end of 2015. In total, between 576 and 677 coal-fired unit retrofits will be needed by the end of 2015, totaling 234 to 258 GW of costly retrofitted coal capacity.

Source: NERC & EPA, Utility Air Toxics Rule

NATURAL GAS PRICE VOLITILITY

- **Natural Gas (NG) thermal** units previously reserved for peaking plants are now the preferred base generation asset. NG makes up approximately 29% of US overall market and 30% of Utah's assets.
- **The global solar PV** market installations reached a record high of 27.4GW in 2011, up 40% Y/Y, according to the annual PV market report, 2012
- This forecast does not take into consideration the price if a global trade opens for Natural Gas.
- **Are Coal plant risks best mitigated by replacing coal assets with all NG assets?**

U.S. Natural Gas Summary	2011	2012	2013	2014
Prices	(dollars per thousand cubic feet)			
Wellhead				
Henry Hub Spot	4.12	2.83	*3.86*	*4.02*



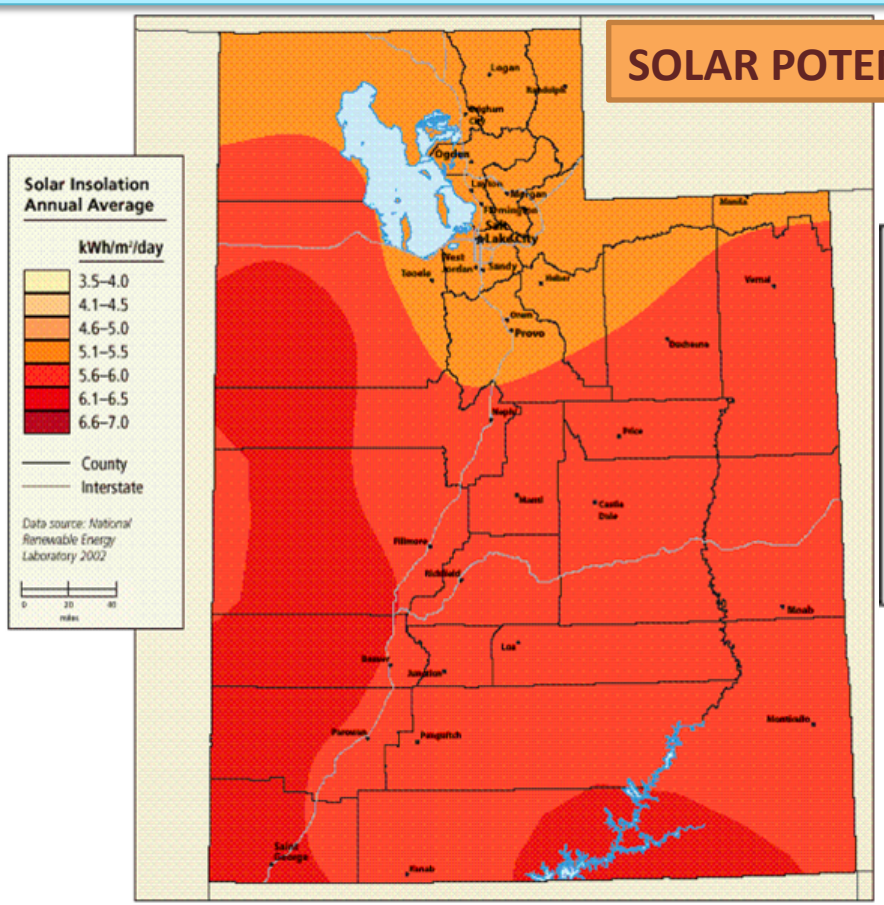
Source: EIA

SOLAR VS. WIND POTENTIAL

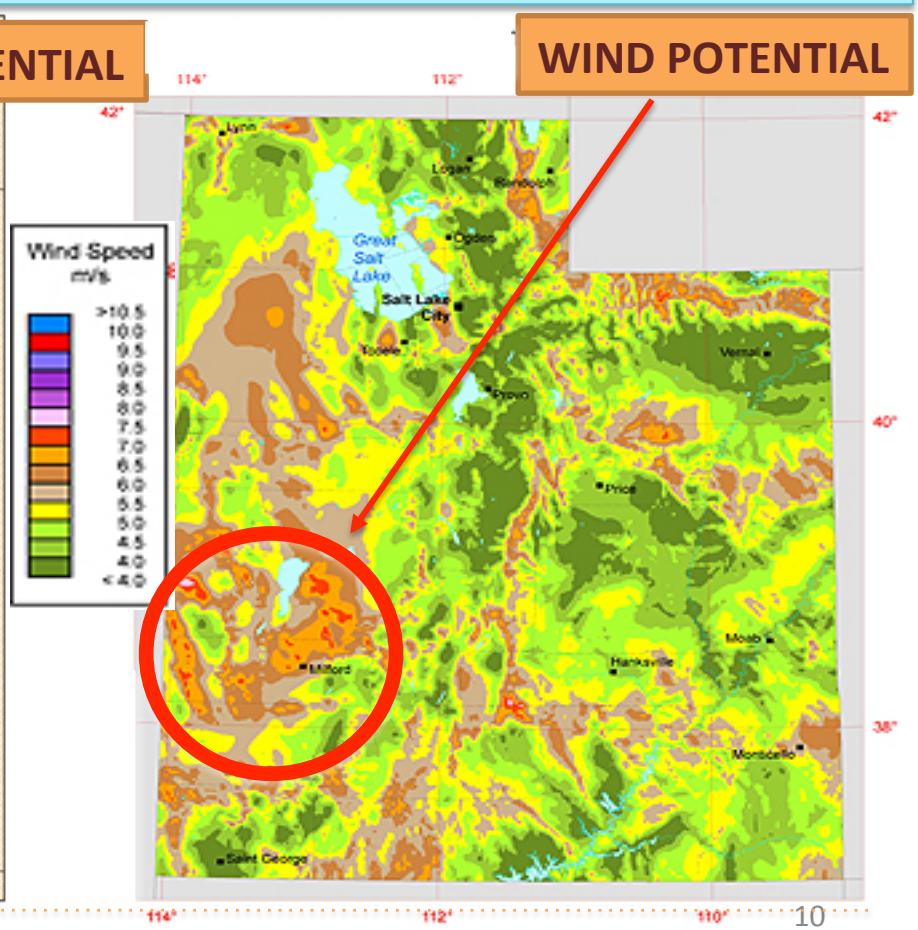
Scatec Solar
Improving our future™

Of the 50 US states, Utah ranks in the top 10 for solar potential. Utah ranks 20th from the bottom for potential windy land area. Compared to Texas with 435,638.6 km^2 of 30% capacity factor wind area, Utah only provides 5,273.6 km^2 of wind land area. After excluding national parks and private land, Utah can only capitalize on 50.3% of its windy land area.

SOLAR POTENTIAL



WIND POTENTIAL



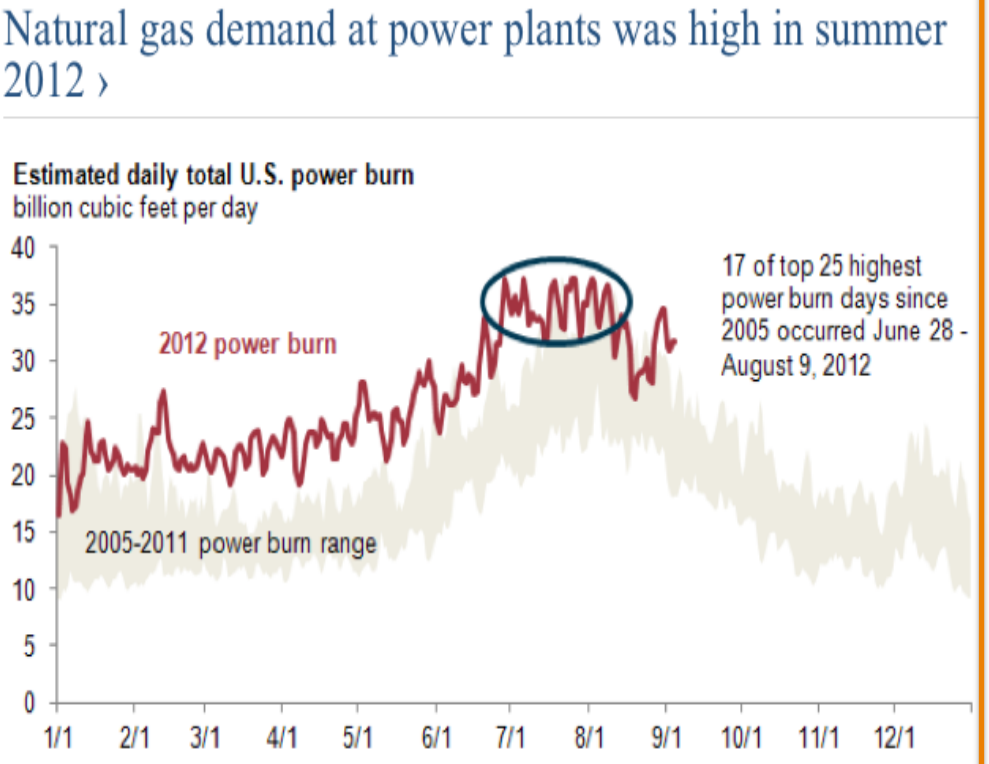
Source: Utah Clean Energy

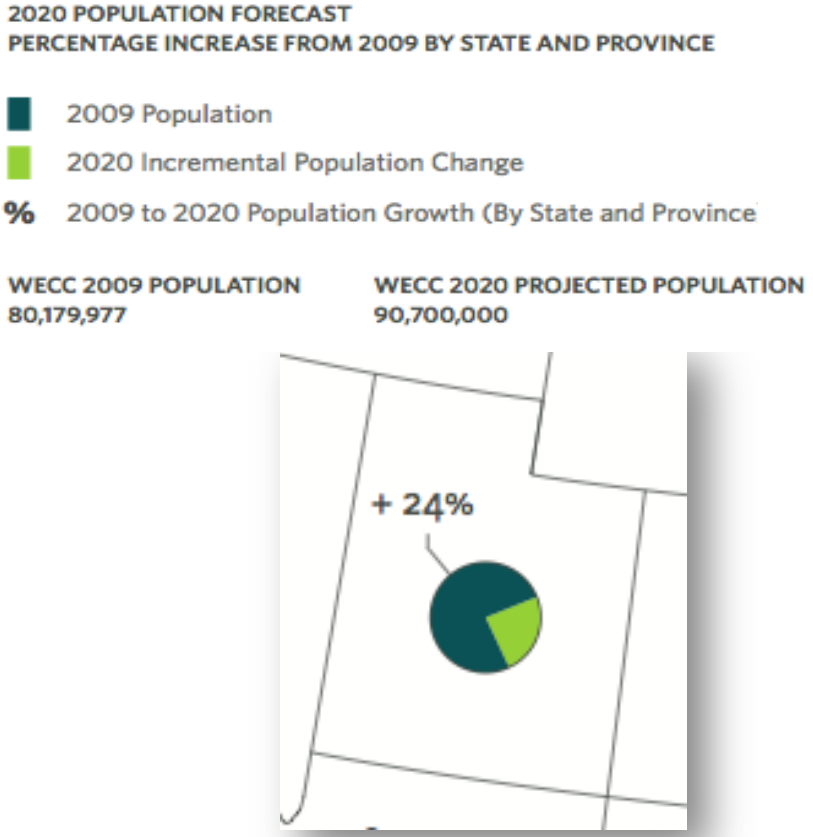
Source: NREL

SUPPORT YOUR PEAK LOAD GROWTH

Scatec Solar
Improving our future™

According to WECC, load growth in the Western Interconnection is projected to increase 14 percent from 2009 to 2020.





Source: EIA & 2011 WECC Transmission Plan

JOB CREATION

Scatec Solar
Improving our future™

- **As the solar industry grows, so does its impact on the economy. According to The Solar Foundations Solar Job Census 2012, there were over 119,000 solar workers in the U.S., a 13.2 percent increase over employment totals in 2011 These workers are employed at 5,600 business operations around the U.S.**

Source: DOE and SEIA, The Solar Foundation

U.S SOLAR INSTALLED BY STATE

Scatec Solar
Improving our future™

The list below outlines the top 13 states by Q3 2012 PV installed capacity.

Source: SEIA

UTAH POWER

Scatec Solar
Improving our future™

FACILITY	TYPE	SIZE (MW)	NOTE
Carbon Plant	*Thermal (coal)*	*172*	*Commissioned 1954*
Naughton Plant	*Thermal (coal)*	*700*	*Commissioned 1963*
Huntington Plant	*Thermal (coal)*	*895*	*Commissioned 1974*
Intermountain Power Plant	*Thermal (coal)*	*1900*	*Commissioned 1986*
Hunter Plant	*Thermal (coal)*	*1,320*	*Commissioned 1978*
Gadsby Plant	*Thermal (natgas)*	*353*	*Re-tooled 1991. Expansions 1994 & 2002.*
Currant Creek	*Thermal (natgas)*	*550*	*Commissioned 2005.*
Lake Side	*Thermal (natgas)*	*558*	*Commissioned 2007.*
20 Hydro	*Hydro*	*145*	*Commissioned 1915 and later*
Blundell Plat	*Geothermal*	*36*	*Commissioned 1984*
Spanish Fork Wind Park 2	*Wind*	*18.9*	*Commissioned 2008*
TOTAL		***6647***	

TYPE	SIZE	PERCENT
Thermal (coal)	3,087	65.0%
Thermal (natgas)	1,461	30.8%
Geothermal	36	0.8%
Hydro	145	3.1%
Wind	19	0.4%
Total	**4,748**	**100.0%**

Exposed to climate change / global warming / health issues

Exposed to environmental impacts

NOT ENOUGH!

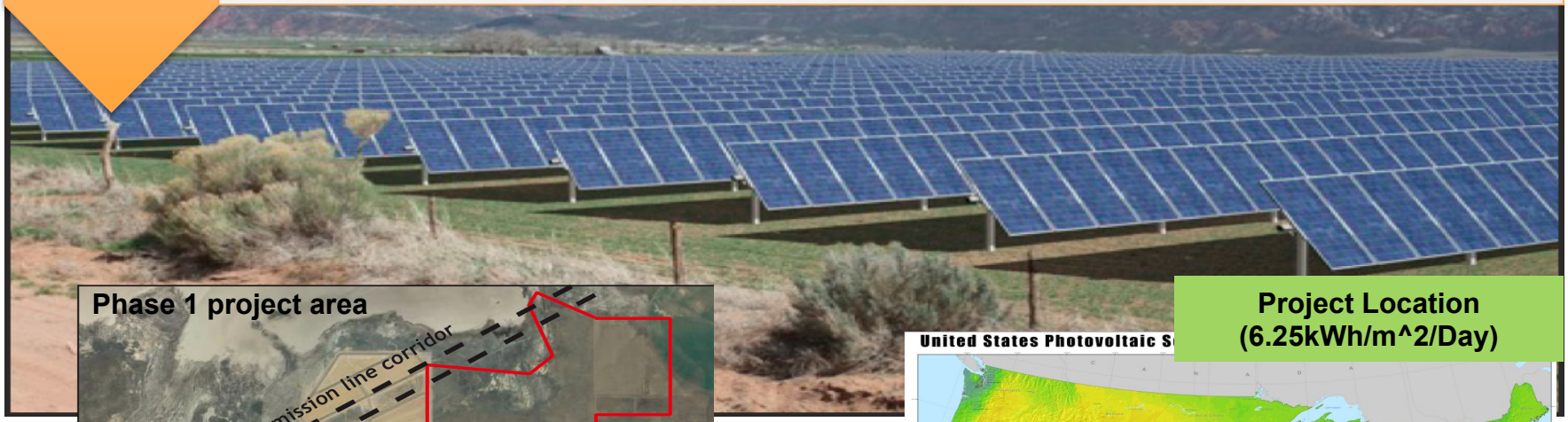
PacifiCorp has 62,800 miles of distribution lines and approximately 16,200 miles of transmission lines – more than any other single entity in the West.

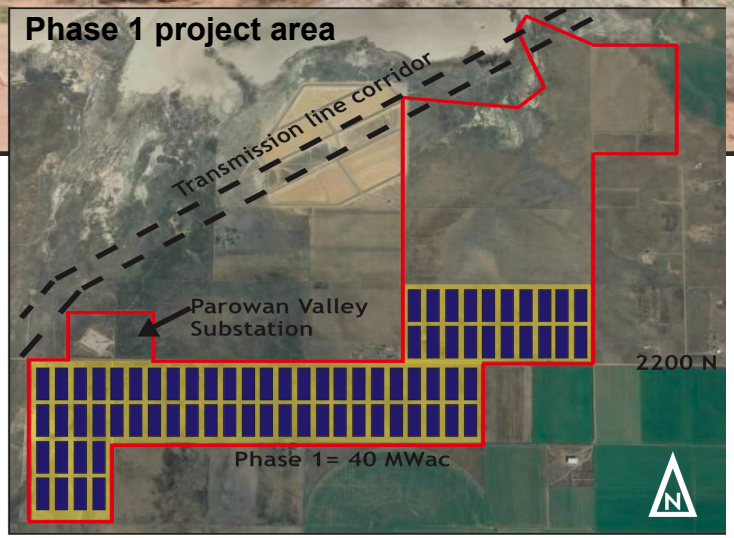
UTAH RED HILLS RENEWABLE PARK

Scatec Solar
Improving our future™

Phase One

- Upon execution of the PPA, building permits will be secured and equipment purchase orders will be placed.
- Commercial operations can begin 16 months from the execution of PPA.





Project Location (6.25kWh/m^2/Day)